UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/625,606	07/24/2003	Christopher A. Zelley	115-32US/12667/100114	7925

23838 7590 11/17/2005

KENYON & KENYON
1500 K STREET NW
SUITE 700
WASHINGTON, DC 20005

EXAMINER	
HANNON, CHRISTIAN A	

ART UNIT	PAPER NUMBER
2685	

DATE MAILED: 11/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/625,606	ZELLEY, CHRISTOPHER A.	
	Examiner	Art Unit	
	Christian A. Hannon	2685	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,6 and 8-27* is/are rejected.

7)☒ Claim(s) *3-5 and 7* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 July 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1/27/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to because they contain non-descriptive boxes. These boxes should be amended to include descriptive labels, so that at a glance once can quickly tell the components of the proposed invention. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities: on page 3 paragraph [009], line 1, the third word is recited as 'wit' this should be corrected to be 'with'.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1, 17 & 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, recites the limitation "the first transmission line" in the sixth line of the claim. There is insufficient antecedent basis for this limitation in the claim, since nowhere earlier in the claim is 'a first transmission line' introduced.

Claim 17 recites the limitation "the first and second detectors" in the first line of the claim. There is insufficient antecedent basis for this limitation in the claim. Since the claim stems from independent claim 1, where there is only reference to a 'detection circuitry' on the twelfth line of claim 1. Claim language for a first and second detectors are not introduced until claim 6 and claim 2, respectively.

Claim 18 recites the limitation "the detectors" in the first line of the claim. There is insufficient antecedent basis for this limitation in the claim. Since the claim stems

from independent claim 1, where there is only reference to a 'detection circuitry' on the twelfth line of claim 1. Claim language for a first and second detectors are not introduced until claim 6 and claim 2, respectively.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1, 2, 6, 8, 9, 19, 21, 22 & 23 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Swank, II (US 2002/0113601), herein Swank.

Regarding claims 1 & 22, Swank teaches a circuit for measuring power transfer between a first node and a second node (Figure 1, Items 13 & 14; Swank) comprising a first port directly connected to the first node for receiving a RF output signal (Figure 1, Item 11; Swank) and a second port directly connected to the second node for providing the RF output signal therefrom (Figure 1, Item 12; Swank), a first transmission line for propagating the RF output signal between the first port and the second port, a third port and a fourth port, the fourth port for providing a first signal indicative of forward propagating RF energy propagating from the first port to the second port (Figure 1, Item 15; Swank) and the third port for providing a second signal indicative of backwards

propagating RF energy propagating from the second port to the first port (Page 1, [0020]; Swank) and detection circuitry comprising a first input port coupled to the third port for receiving the first signal indicative of forward propagating RF energy (Figure 3, Item 21, "Fwd"; Swank), a second input port coupled to the fourth port for receiving the signal indicative of backwards propagating RF energy (Figure 3, Item 21, "Rev"; Swank), a first detected energy output signal port for providing a first detected energy output signal (Figure 3, Item 26; Swank), and a second detected energy output signal port for providing a second detected energy output signal (Figure 3, Item 25; Swank). Furthermore the method in claim 22 is analogous to the apparatus of claim 1 and is therefore similarly rejected.

In regards to claim 2, Swank teaches the circuit according to claim 1, wherein the detection circuitry comprises a second detector circuit (Figure 3, Item 26; Swank) having an input port for receiving the second signal indicative of backward propagating RF energy and having an output port for providing a second intermediate detected signal in dependence upon the second signal indicative of backward propagating RF energy (Page 2, [0032]; Swank).

Regarding claim 6, Swank teaches the circuit according to claim 1, wherein the detection circuitry comprises a first detector circuit (Figure 3, Item 25; Swank) having an input port for receiving the first signal indicative of forward propagating RF energy and having an output port for providing a first intermediate detected signal in dependence upon the first signal indicative of forward propagating RF energy (Page 2, [0024]; Swank).

In regards to claim 8, Swank teaches the circuit according to claim 1, comprising a regulator circuit, the regulator circuit for providing a regulated supply voltage to the detection circuitry (Page 2, [0033]; Figure 3, Item 35; Swank).

Regarding claim 9, Swank teaches the circuit according to claim 1, wherein the coupler circuit comprises a main signal path and a coupled signal path capacitively coupled to the main signal path, the main signal path disposed between the first port and the second port and the couple signal path disposed between the third port and the fourth port (Figure 3, Items 11, 12 & 21; Figure 1, Items 15 & 16; Swank).

In regards to claim 19, Swank teaches the circuit according to claim 1, wherein the circuit is used for wireless applications where the second node is coupled to an antenna for transmitting a wireless RF signal dependent upon the RF output signal (Page 1, [0019]; Swank).

Regarding claim 21, Swank teaches the circuit according to claim 1, wherein the first node comprises an output port of a power amplifier circuit and the second node comprises an input port of a RF antenna (Figure 3, TRANSMITTER & pictorial description of antenna connected to Item 14; Swank). While a power amplifier is not explicitly discloses by Swank it is inherent that in an RF communication system the signal fed to the antenna stems for a power amplifier.

In regards to claim 23, Swank teaches the method of claim 22, further comprising the step of determining a VSWR of the power transfer in dependence upon the first detected energy output signal and the second detected energy output signal (Page 2, [0032]; Swank).

Regarding claims 17 & 26, Swank teaches the method according to claim 22, wherein for a substantial impedance match between the power amplifier circuit and the first load, the first detected energy output signal is substantially zero and second detected energy output signal is substantially maximized (Page 1, [0003-0004]; Swank). This follows inherently since the first detected energy output signal of Swank (Figure 3, Item 26; Swank) correlates to the reverse signal power, that when a 'substantial' impedance match is obtained would inherently be 'substantially' zero. It follows then that all of the energy would be forward propagating and the second detected energy output would thusly be maximized under these same 'substantial' conditions. Furthermore claim 17 is the analogous 'device' claim to the method claim in 26 and is therefore similarly rejected.

In regards to claims 18 & 27, Swank teaches the method according to claim 22, wherein for an other than substantial impedance match between the power amplifier circuit and the first load, the first detected energy output signal is substantially other than zero and second detected energy output signal is substantially other than maximized (Page 1, [0003-0004]; Swank). This follows inherently since when there is an other than substantial impedance match between the power amplifier circuit and the first load there is inherently some reverse propagating or reflected energy traversing the path of transmission, defined as the path from PA to the first load, therefore the first detected energy output signal, or the reflected energy is substantially other than zero, and the second detected energy signal or the forward energy is substantially other than

maximized. Furthermore claim 18 is the analogous 'device' claim to the method claim in 27 and is therefore similarly rejected.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Swank.

Regarding claim 12, Swank teaches the circuit of claim 9, Swank however does not teach wherein the main signal path and the coupled signal path are disposed on a same semiconductor substrate. However it is well known in the art to fabricate circuits on the same chip. Therefore it would have been obvious to fabricate the circuit on the same semiconductor substrate in order to provide for ease of manufacture and cost saving production advantages.

In regards to claims 13 & 14, Swank teaches the circuit according to claim 1, however Swank fails to teach a first impedance disposed between the third port and a ground potential and a second impedance disposed between the fourth port and a ground potential. However a basic understanding of electricity, common to anyone of ordinary skill in the art, would prove that in order for the third & fourth port, disclosed by Swank (Figure 1, Items 16 & 15 [respectively]), to be functional would obviously require

connectivity to circuitry (to provide relevant signals to the port), therefore requiring a ground, and an inherent line impedance disposed between the circuit ground and the actual physical port emanating from a finite length of wire creating a circuit path.

9. Claims 10, 11 & 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Swank in view of Mecklenburg (US 4,547,728).

Regarding claim 10 & 24, Swank teaches the circuit according to claim 1 along with a coupler circuit to couple a main signal path to a coupled signal path (Page 2, [0023]; Swank). However Swank does not explicitly state that a coupling capacitor disposed between the main signal path and the coupled signal path couples a RF signal propagating along the main signal path to the coupled path. Mecklenburg teaches a coupling capacitor disposed between the main signal path and the coupled signal path (Figure 1, Shunt Capacitor 23; Mecklenburg) that couples a RF signal propagating along the main signal path to the coupled path (Column 5, Lines 66-67; Column 6, Line 1; Mecklenburg). Therefore it would have been obvious to include a coupling capacitor in order to achieve RF signal detection. Claim 24 recites an analogous method claim to the device claim of claim 10 in the present application and is therefore similarly rejected.

In regards to claim 11, Swank teaches the circuit according to claim 9, however Swank does not teach wherein the main signal path is other than disposed on a same semiconductor substrate as the coupled signal path. Mecklenburg however clearly shows a wire of its own design (i.e. Not on the same substrate) being coupled to a circuit for detection fabricated on its own substrate (Figure 1, Items 11 & 20; Mecklenburg). Therefore it would have been obvious to implement Swank, with a main

signal path other than disposed on a same semiconductor substrate as the coupled signal path, in order to test RF signals propagating through wires.

10. Claims 15 & 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Swank in view of Sigmon et al (US 6,157,253), herein Sigmon.

In regards to claim 15, Swank teaches the circuit of claim 1, however Swank goes into no detail concerning the composition of the quarter wave coupler circuit shown in figure 3, item 21 & the line length disposed between item 11 & 12 in the same figure. However Sigmon teaches the use of distributed components in a quarter wave coupler circuit (Column 2, Lines 46-49; Sigmon). Therefore it would have been obvious to modify Swank to include distributed components, such as that taught by Sigmon, in order to maximize the area the circuit took up on a semiconductor chip.

Regarding claim 16, Swank teaches the circuit of claim 1, however Swank goes into no detail concerning the composition of the quarter wave coupler circuit shown in figure 3, item 21 & the line length disposed between item 11 & 12 in the same figure. However Sigmon teaches the use of lumped components in a quarter wave coupler circuit (Column 2, Lines 46-49; Sigmon). Therefore it would have been obvious to modify Swank to include distributed components, such as that taught by Sigmon, in order to minimize the area the circuit took up on a semiconductor chip.

11. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Swank in view of Horigan et al (US 6,566,848), herein Horigan.

With respect to claim 20, Swank teaches the circuit according to claim 8, however Swank fails to teach that the regulator circuit comprises a temperature sensing

circuit for sensing a temperature of the circuit and for affecting the regulated supply voltage in dependence thereon. Horigan teaches a regulator circuit comprising a temperature sensing circuit for sensing a temperature of the circuit and for affecting the regulated supply voltage in dependence thereon (Column 2, Lines 39-45; Horigan). Therefore it would have been obvious to modify Swank to include a temperature sensing voltage regulator circuit, such as that taught by Horigan, in order to prevent fluctuations in the output voltage due to an undesirable circuit temperature.

12. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Swank in view of Plotnik et al (US 6,873,608), herein Plotnik.

In regards to claim 25, Swank teaches the method according to claim 22, however Swank fails to teach that the first detected energy output signal and the second detected energy output signal are used by a feedback control circuit for controlling of the PA. Plotnik teaches that a portion of the transmit signal, herein being interpreted as the respective first & second detected energy output signals of Swank, is used by a feedback control circuit for controlling the PA (Column 10, Lines 5-9; Plotnik). Therefore it would have been obvious to modify Swank the aforementioned feedback control circuit, such as that taught by Plotnik, in order to stabilize output transmit power.

Allowable Subject Matter

13. Claims 3-5 & 7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

With respect to claim 3, Swank teaches the circuit according to claim 2, however Swank fails to teach a second reference circuit having an output port for providing a second reference signal therefrom and a second difference amplifier circuit having a first input port, a second input port and an output port, the first input port for receiving the second intermediate detected signal, the second input port for receiving the second reference signal and the output port directly connected to the second detected energy output signal port for providing the second detected energy output signal therefrom.

Regarding claim 7, Swank teaches the circuit according to claim 6, however Swank fails to teach a first reference circuit having an output port for providing a first reference signal therefrom and a first difference amplifier circuit having a first input port, a second input port and an output port, the first input port for receiving the first intermediate detected signal, the second input port for receiving the first reference signal and the output port directly connected to the first detected energy output signal port for providing the first detected energy output signal therefrom.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Swank, II (US 2002/0113600) discloses a VSWR monitor and alarm.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christian A. Hannon whose telephone number is (571) 272-7385. The examiner can normally be reached on Mon. - Fri. 8:00 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Christian A. Hannon
November 9, 2005

EDWARD
SUPERVISORY
TECHNOLOGY